

# Profiles of Childhood Trauma in Patients with Alcohol Dependence and Their Associations with Addiction-Related Problems

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**Background:** The high occurrence of childhood trauma in individuals with alcohol dependence is well-recognized. Nevertheless, researchers have rarely studied which types of childhood trauma often co-occur and how these combinations of different types and severities of childhood trauma are related to the patients' current addiction-related problems. We aimed to identify childhood trauma profiles in patients with alcohol dependence and examined relations of these trauma profiles with the patients' current addiction-related problems.

**Methods:** In 347 alcohol-dependent patients, 5 types of childhood trauma (sexual abuse, physical abuse, emotional abuse, emotional neglect, and physical neglect) were measured using the Childhood Trauma Questionnaire. Childhood trauma profiles were identified using cluster analysis. The patients' current severity of addiction-related problems was assessed using the European Addiction Severity Index.

**Results:** We identified 6 profiles that comprised different types and severities of childhood trauma. The patients' trauma profiles predicted the severity of addiction-related problems in the domains of psychiatric symptoms, family relationships, social relationships, and drug use.

**Conclusions:** Childhood trauma profiles may provide more useful information about the patient's risk of current addiction-related problems than the common distinction between traumatized versus nontraumatized patients.

**Key Words:** Childhood Trauma, Adverse Child-Rearing Environment, Addiction-Related Problems, Alcohol Dependence, Alcohol Use Disorders.

CURRENT DEFINITIONS of childhood trauma (NSPCC, 2010; WHO, 2002) converge that trauma not only incorporates sexual and physical abuse, but also emotional abuse, physical neglect, and emotional neglect. These types of childhood trauma are highly prevalent in alcohol-dependent patients, with 22 to 74% of patients disclosing at least 1 type of childhood abuse or neglect (Huang et al., 2012; Langeland and Hartgers, 1998).

A history of childhood trauma has an impact on the development, severity, and course of alcohol use disorders. Patients exposed to childhood trauma develop alcohol use disorders at an earlier age (Dom et al., 2007; Kaufman et al.,

2007) and show more severe alcohol abuse (Dom et al., 2007) than patients without childhood trauma. Childhood emotional abuse may be particularly associated with a greater severity of alcohol dependence (Schwandt et al., 2013).

Alcohol use disorder patients with childhood trauma show more comorbid psychiatric disorders, for example mood disorders, posttraumatic stress disorders, anxiety disorders, and personality disorders (Evren et al., 2006; Kessler et al., 1997b; Regier et al., 1990). Moreover, alcohol use disorder patients with childhood trauma benefit less from treatment. They are abstinent for a shorter period of time (Greenfield et al., 2002; Walitzer and Dearing, 2006), relapse more often (Farley et al., 2004; Greenfield et al., 2002; Walitzer and Dearing, 2006), and are less adherent to treatment (Jaycox et al., 2004) than patients not exposed to childhood trauma. The greater addiction severity and the worse treatment outcomes of patients with alcohol use disorders exposed to childhood trauma may be explained by permanent dysfunctions of the central neurotransmission system caused by the traumatic experiences (Berglund et al., 2013).

Most studies so far have reported on the relations between sexual or physical abuse in childhood and the later course or outcome of alcohol use disorders (Nayak et al., 2012; Sartor et al., 2007; Spak et al., 1997). Emotional abuse, emotional neglect, or physical neglect have received far less attention

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(Evren et al., 2006; Stoltenborgh et al., 2013). Studies that considered emotional abuse, emotional neglect, or physical neglect found that these types of childhood trauma predicted the severity of alcohol dependence and psychiatric symptoms in individuals with alcohol use disorders independently from physical or sexual abuse (Norman et al., 2012; Schwandt et al., 2013; Teicher et al., 2006).

In individuals with a history of childhood trauma, the exposure to multiple different types of trauma is the norm rather than the exception (Finkelhor et al., 2007; Kessler et al., 1997a). In a study among inpatients with alcohol dependence (Huang et al., 2012), more than half of the patients with childhood trauma reported 2 or more different types of childhood trauma. Huang and colleague (2012) found a positive dose-response relationship between the number of childhood trauma types and the risk of psychiatric comorbidities and suicide attempts. This result is in accordance with studies in the general population, in which a higher number of childhood trauma types was related to more adverse outcomes (Edwards et al., 2003; Felitti et al., 1998; Rodgers et al., 2004).

Very few studies have examined patterns of childhood trauma profiles in substance use disorder populations. To our knowledge, only 2 studies examined combinations of different types of childhood trauma in individuals with substance use disorders. Ruggiero and colleagues (1999) examined profiles of childhood trauma in a sample of patients with substance use disorders that included a large proportion of patients with drug-related disorders. The participants could be characterized by 5 different childhood trauma profiles: (i) emotional neglect alone; (ii) moderate physical abuse combined with severe emotional neglect; (iii) severe emotional and physical abuse and neglect; (iv) sexual abuse but only low levels of all other types of trauma; and (v) severe levels of all types of trauma. Tubman and colleagues (2011) studied profiles of childhood trauma in adolescents with substance use disorders and identified 3 different profiles of childhood trauma: (i) patients with low abuse; (ii) patients with moderate sexual abuse, physical abuse, and neglect; and (iii) patients with severe sexual abuse, physical abuse, and neglect. Both studies, however, focused on patients with drug-related disorders or polysubstance abuse. No study so far examined childhood trauma profiles in patients with alcohol dependence.

The childhood trauma profiles in patients with substance use disorders may affect the patient's health-related outcomes. In the study by Ruggiero and colleagues (1999), profiles characterized by a higher severity of childhood trauma and a higher number of different types of childhood traumatic events were related to an earlier onset of substance use and more personality disorder symptoms than profiles characterized by a lower burden of childhood trauma. In the Tubman and colleagues (2011) study, more severe trauma profiles were related to more severe psychiatric symptoms and more risk behavior (i.e., their rate of unprotected intercourse).

While the existing findings suggest that different profiles of childhood trauma exist in patients with drug-related disorders or polysubstance abuse, it remains unclear whether the same applies to patients with alcohol dependence only. Trauma profiles of patients with alcohol dependence may differ from patients with drug dependence. Khoury and colleagues (2010) found that lifetime alcohol use and drug use was associated with childhood physical and emotional abuse, whereas lifetime drug use but not alcohol use was associated with childhood sexual abuse. Kilpatrick and colleagues (2000) reported that drug use was related to a higher number of childhood sexual and physical abuse experiences compared with alcohol use. In a sample of women suffering from substance use disorders and comorbid posttraumatic stress disorder (Simons et al., 2003), current drug use was related to childhood physical, sexual, and emotional abuse, whereas current alcohol use was unrelated to childhood abuse. According to these results, patients with alcohol dependence may show different childhood trauma profiles than patients with illicit drug dependence. Furthermore, researchers have not sufficiently studied which combinations of different types of trauma typically co-occur in patients with alcohol dependence, and how these childhood trauma profiles relate to the patients' current addiction severity and functioning.

We, therefore, aimed (i) to identify childhood trauma profiles in a large sample of alcohol-dependent inpatients and (ii) to examine potential relationships between these profiles and the patient's current severity of addiction-related problems. We hypothesized that the patients with more severe childhood trauma profiles, characterized by a greater number and a greater severity of childhood trauma types, would show more severe addiction-related problems.

## MATERIALS AND METHODS

### *Demographic and Clinical Characteristics of the Sample*

All participants were admitted to a detoxification unit for patients with substance use disorders at the University Medical Center Hamburg-Eppendorf. Patients were included if they (i) were diagnosed with alcohol dependence according to DSM-IV (American Psychiatric Association, 1994), (ii) were aged between 18 and 65 years, and (iii) were literate in German. Patients diagnosed with (i) substance dependence other than alcohol dependence, (ii) psychotic symptoms, or (iii) cognitive impairments were excluded. Substance abuse other than alcohol could be present in the patients. Assessments were scheduled 10 days after admission at the earliest to ensure that the detoxification was completed. All subjects provided written consent after they had been informed about the study aims and procedures. The study protocol was approved by the local ethics committee.

During the recruitment period, the data of 347 patients with a diagnosis of alcohol dependence were obtained. The patient's age ranged from 18 to 65 ( $M = 42.9$ ,  $SD = 9.7$ ), with most patients being male ( $n = 247$ , 71.2%). About half of the patients (49.3%) were never married, a third (31.4%) were divorced, and a fifth of the patients (17.3%) were married. About half of the patients (48.4%) had children. The patients' average years of education were  $M = 11.1$  ( $SD = 1.5$ ). About half of the patients (51.0%) were unemployed, 42.1% were employed, 5.5% were retired, and 1.2%

were in apprenticeship. More than half of the patients (56.2%) lived alone, 28.2% lived with a partner, 13.0% lived with other people, and 2.6% had no stable place of residence.

### Measures

Psychiatric diagnoses of alcohol dependence were given using the Structured Clinical Interview for the DSM-IV (SCID; Wittchen and First, 1997). The SCID is one of the most widely used structured interviews to measure psychiatric disorders according to DSM-IV and has established reliability and validity (Lobbetael et al., 2011; Zanarini and Frankenburg, 2001).

The severity of the patients' current addiction-related problems was measured with the European Addiction Severity Index (EuropASI; Gsellhofer et al., 1999). The EuropASI is a semistructured interview that assesses the severity of problems in 9 different areas of life (medical status, economic situation, work situation, alcohol use, drug use, legal status, family relationships, social relationships, psychiatric status) in the past 30 days. For example, to assess a patient's medical problems, the patient was asked how many days the patient has experienced medical problems in the past 30 days, how troubled the patient has been by these medical problems in the past 30 days, and how important it is for the patient to receive treatment now for these medical problems. In our study, we assessed the severity of addiction-related problems in the past 30 days prior to the detoxification of the patients. The EuropASI has been developed on the basis of the fifth version of the American Addiction Severity Index (McLellan et al., 1992). The severity of problems was calculated for each of the 9 subscales and ranged from 0 = "no problem" to 1 = "extreme problem." Validity studies reported sufficient internal consistency, inter-rater reliability, and construct validity (Scheurich et al., 2000; Schmidt et al., 2007; Weiler et al., 2000). Age at onset of substance dependence, years of substance dependence, and number of previous detoxifications were assessed as additional outcome variables.

The exposure to childhood trauma was measured using the Childhood Trauma Questionnaire (CTQ; Bernstein and Fink, 1998; Wingefeld et al., 2010). This widely used self-rating instrument contains 25 items to cover 5 types of childhood trauma (sexual abuse, physical abuse, emotional abuse, emotional neglect, and physical neglect). The frequency of each type of trauma is rated on five 5-point Likert scales from 1 = "never" to 5 = "very often." The CTQ yields scores for each of the 5 subscales and a total score. The severity of trauma can be classified for each trauma type according to subscale-specific cutoff scores (Bernstein and Fink, 1998) as "none or minimal" (emotional abuse 5–8, physical abuse 5–7, sexual abuse 5, emotional neglect 5–9, physical neglect 5–7), "low to moderate" (emotional abuse 9–12, physical abuse 8–9, sexual abuse 6–7, emotional neglect 10–14, physical neglect 8–9), "moderate to severe" (emotional abuse 13–15, physical abuse 10–12, sexual abuse 8–12, emotional neglect 15–17, physical neglect 10–12), and "severe to extreme" (emotional abuse  $\geq 16$ , physical abuse  $\geq 13$ , sexual abuse  $\geq 13$ , emotional neglect  $\geq 18$ , physical neglect  $\geq 13$ ). The CTQ has demonstrated good internal consistencies, test-retest reliabilities, factorial, convergent, and discriminant validity in patients with substance use disorders (Fink et al., 1995; Wingefeld et al., 2010).

### Statistical Analysis

To identify childhood trauma profiles, the 5 CTQ subscale scores were used to perform a cluster analysis. To select an appropriate cluster solution, we first applied a hierarchical cluster analysis using the Ward's algorithm. In the agglomeration schedule, we selected the number of clusters according to the sum of the squared within-cluster distances of 2 adjacent steps. Cluster formation was stopped at a 6-cluster solution, when the increase of the sum of the squared within-cluster distances of 2 adjacent steps was large, indicating that

this cluster solution provided the best separation of cases across the clusters and allowed a meaningful interpretation. We then applied a *k*-means nonhierarchical cluster analysis with 6 clusters, as this method has been proved to be superior to other cluster methods (Clatworthy et al., 2007). To assess the robustness of the 6-cluster solution, we randomly split our sample into 2 subsamples and repeated the *k*-means cluster analysis separately for the 2 subsamples. Results indicated highly similar cluster profiles to the previously found cluster solution.

Analysis of variance (ANOVA) *F*-tests were conducted to examine differences in the CTQ scores between the trauma clusters. Differences in the addiction-related problems between the trauma clusters were tested with a multivariate analysis of variance (MANOVA) to account for multiple correlated outcomes. To test for potential covariates, the patients' gender, years of education, age at onset of substance abuse, years of substance abuse, and days between the end of physical withdrawal and the assessment interview were included in a preliminary model.

As secondary outcomes, we analyzed differences in alcohol dependence characteristics (age at onset of substance dependence, years of substance dependence, and number of previous detoxifications) between the trauma clusters with a MANOVA. The patients' gender, years of education, and days between the end of physical withdrawal and the assessment interview were included in a preliminary model to test for potential covariates.

For post hoc comparisons of all analyses, we applied Tukey corrections to account for multiple comparisons. The Tukey test maintains a 95% joint confidence level to avoid a type I error for a series of comparisons. All analyses were conducted using SPSS IBM Statistics Version 21 (IBM Corp., Armonk, NY).

## RESULTS

The greatest severity of addiction-related problems according to the EuropASI was found in the domains alcohol use and of economic situation (see Table 1). Problems related to drug consumption other than alcohol and legal problems were low, on average.

### Clusters of Childhood Trauma

Applying cutoff scores of at least "moderate to severe" exposure of childhood trauma according to the CTQ, 1 of 2 patients (50.4%) reported at least 1 type of childhood trauma

**Table 1.** Clinical Characteristics (*n* = 347)

|  | <i>M</i> | <i>SD</i> |
|--|----------|-----------|
| Lifetime years of substance dependence | 13.2     | 9.6       |
| Age at onset of substance dependence   | 29.7     | 9.9       |
| Number of previous detoxifications     | 2.2      | 3.5       |
| EuropASI composite <sup>a</sup>        |          |           |
| Medical status                         | 0.29     | 0.33      |
| Economic situation                     | 0.62     | 0.40      |
| Work situation                         | 0.26     | 0.32      |
| Alcohol use                            | 0.60     | 0.18      |
| Drug use                               | 0.02     | 0.06      |
| Legal status                           | 0.05     | 0.12      |
| Family relations                       | 0.19     | 0.22      |
| Social relations                       | 0.14     | 0.19      |
| Psychiatric status                     | 0.29     | 0.23      |

<sup>a</sup>European Addiction Severity Index (EuropASI): 0 = no problem to 1 = extreme problem.



(sexual abuse, physical abuse, emotional abuse, emotional neglect, or physical neglect). Of the patients reporting at least 1 form of childhood trauma, 1 of 3 (31.4%) patients was exposed to a “severe to extreme” trauma.

Most (64.6%) of the traumatized patients experienced multiple types of trauma. Emotional neglect was most frequently reported (31.4%), followed by physical neglect (28.2%), emotional abuse (27.1%), physical abuse (20.2%), and sexual abuse (15.3%).

The cluster analysis yielded a 6-cluster solution, which provided the best separation of cases across the clusters and a sufficient basis for interpretation. All 5 CTQ subscale scores significantly differed between these 6 trauma clusters (see Table 2). The first cluster (Cluster 1 “None or Minimal Trauma”) comprised 42.9% of the patients of the total sample and identified patients that reported none or minimal levels of childhood trauma (see Fig. 1). The average CTQ subscale scores ranged from 5.4 to 7.7 in this group. Two other clusters included patients that predominantly experienced emotional types of childhood trauma: about one-third (31.7%) of the patients experienced moderate emotional neglect (Cluster 2 “Emotional Neglect”), while all other CTQ subscale scores were low. Ten percent (10.1%) of the patients experienced a more severe pattern of emotional trauma (Cluster 3 “Emotional Neglect and Emotional Abuse”), including severe emotional abuse in addition to severe emotional neglect. Another cluster comprised 7.8% of the patients that not only experienced severe emotional abuse and severe emotional neglect, but also sustained severe physical abuse and neglect (Cluster 4 “Emotional and Physical Maltreatment”). Two smaller clusters contained patients exposed to sexual abuse: one group of patients (3.8%) reported the combination of severe sexual abuse and severe emotional neglect (Cluster 5 “Sexual Abuse and Emotional Neglect”); a second group of patients (3.8%) reported severe childhood trauma on all of the 5 CTQ subscales (Cluster 6 “All Types of Trauma”).

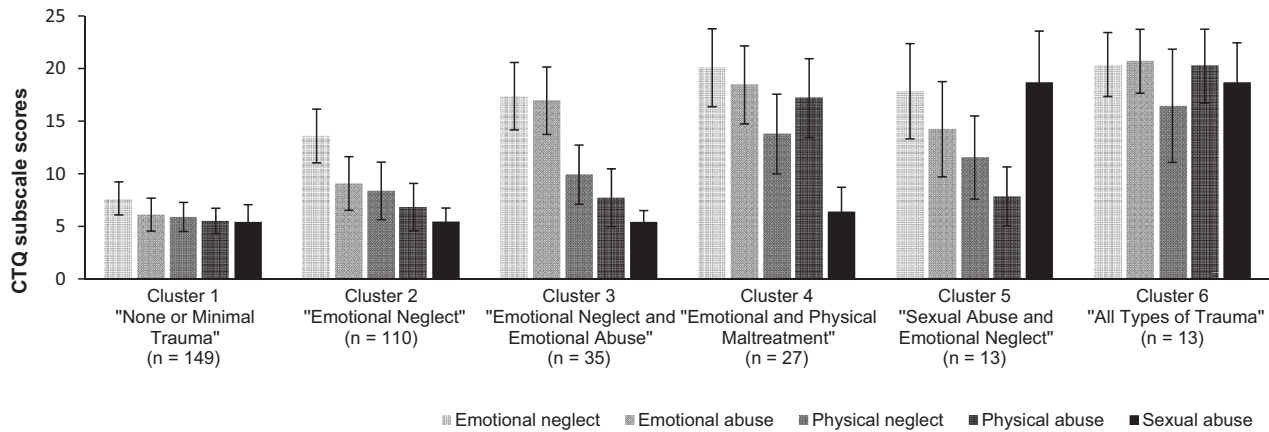
*Relations Between Childhood Trauma Clusters and Current Addiction-Related Problems*

The preliminary MANOVA model, including all potentially relevant covariates, indicated that the patients’ gender was unrelated to the EuropASI scores,  $F(9, 326) = 0.03$ ,  $p = 0.266$ ,  $\eta^2 = 0.033$ . The patients’ gender was, therefore, excluded from the final model. The patients’ years of education,  $F(9, 326) = 3.29$ ,  $p < 0.001$ ,  $\eta^2 = 0.083$ , age at onset of substance abuse,  $F(9, 326) = 4.04$ ,  $p < 0.001$ ,  $\eta^2 = 0.100$ , years of substance abuse,  $F(9, 326) = 3.78$ ,  $p < 0.001$ ,  $\eta^2 = 0.095$ , and time between detoxification and assessment of EuropASI scores,  $F(9, 326) = 3.58$ ,  $p < 0.001$ ,  $\eta^2 = 0.090$ , were significantly associated with the EuropASI scores and were included in the final model as covariates. The final MANOVA model demonstrated a significant multivariate effect for the 6 childhood trauma clusters on the 9

**Table 2.** Means and Standard Deviations of the Subscale Scores of the Childhood Trauma Questionnaire for the Six Trauma Clusters (n = 347)

|                   | Cluster 1<br>“None or<br>Minimal<br>Trauma”<br>(n = 149) |     | Cluster 2<br>“Emotional<br>Neglect”<br>(n = 110) |     | Cluster 3<br>“Emotional<br>Neglect and<br>Emotional<br>Abuse”<br>(n = 35) |     | Cluster 4<br>“Emotional<br>and Physical<br>Maltreatment”<br>(n = 27) |     | Cluster 5<br>“Sexual<br>Abuse and<br>Emotional<br>Neglect”<br>(n = 13) |     | Cluster 6 “All<br>Types of<br>Trauma”<br>(n = 13) |     | F | Eta <sup>2</sup> | p     |            |           |
|-------------------|--|-----|--|-----|---|-----|--|-----|--|-----|---|-----|---|------------------|-------|------------|-----------|
|                   | M  | SD  | M  | SD  | M   | SD  | M  | SD  | M  | SD  | M   | SD  |   |                  |       | df between | df within |
| Emotional neglect | 7.7  | 2.2 | 13.6   | 2.9 | 17.4  | 3.2 | 20.1   | 4.0 | 17.8   | 2.5 | 20.4  | 3.5 | 5 | 341              | 188.1 | 0.73       | <0.001    |
| Emotional abuse   | 6.1  | 1.6 | 9.1  | 2.6 | 16.9  | 3.2 | 18.4   | 3.7 | 14.2   | 4.5 | 20.7  | 3.0 | 5 | 341              | 244.6 | 0.78       | <0.001    |
| Physical abuse    | 5.5  | 1.2 | 6.8  | 2.3 | 7.7   | 2.8 | 17.2   | 3.8 | 7.8  | 2.8 | 20.2  | 3.5 | 5 | 341              | 220.0 | 0.76       | <0.001    |
| Physical neglect  | 5.9  | 1.4 | 8.4  | 2.7 | 9.9   | 2.8 | 13.8   | 3.8 | 11.5   | 4.0 | 16.5  | 5.4 | 5 | 341              | 83.0  | 0.55       | <0.001    |
| Sexual abuse      | 5.4  | 1.6 | 5.5  | 1.3 | 5.4   | 1.1 | 6.4  | 2.3 | 18.7   | 4.9 | 18.7  | 3.8 | 5 | 341              | 236.6 | 0.78       | <0.001    |

Childhood Trauma Questionnaire subscale scores interpretation: none or minimal 5-9, low to moderate 10-14, moderate to severe 15-17, severe to extreme ≥ 18. Emotional abuse: none or minimal 5-8, low to moderate 9-12, moderate to severe 13-15, severe to extreme ≥ 16. Physical abuse: none or minimal 5-7, low to moderate 8-9, moderate to severe 10-12, severe to extreme ≥ 13. Physical neglect: none or minimal 5-7, low to moderate 8-9, moderate to severe 10-12, severe to extreme ≥ 13. Sexual abuse: none or minimal 5, low to moderate 6-7, moderate to severe 8-12, severe to extreme ≥ 13.



**Fig. 1.** Mean Childhood Trauma Questionnaire (CTQ) subscale scores across the 6 child childhood trauma clusters. Error bars denote 1 standard deviation around the mean. CTQ subscale scores interpretation: none or minimal 5–9, low to moderate 10–14, moderate to severe 15–17, severe to extreme  $\geq 18$ . Emotional abuse: none or minimal 5–8, low to moderate 9–12, moderate to severe 13–15, severe to extreme  $\geq 16$ . Physical abuse: none or minimal 5–7, low to moderate 8–9, moderate to severe 10–12, severe to extreme  $\geq 13$ . Physical neglect: none or minimal 5–7, low to moderate 8–9, moderate to severe 10–12, severe to extreme  $\geq 13$ . Sexual abuse: none or minimal 5, low to moderate 6–7, moderate to severe 8–12, severe to extreme  $\geq 13$ .

problem areas of the EuropASI,  $F(45, 1,466) = 2.62$ ,  $p < 0.001$ , partial  $\eta^2 = 0.067$ .

#### Psychiatric Problems

Univariate ANOVA results revealed that the childhood trauma clusters explained the highest proportion of variance (13.8%) of the patients' addiction-related problems in the domain of psychiatric problems (see Table 3). Descriptively, the patients of the cluster "None or Minimal Trauma" reported the lowest severity of psychiatric problems, whereas the patients of the cluster "All Types of Trauma" reported the highest severity of problems (see Fig. 2). Post hoc comparisons using Tukey corrections indicated that the patients of all 5 trauma clusters that included at least 1 type of childhood trauma reported significantly more severe psychiatric problems than the patients of the cluster "None or Minimal Trauma" (all  $p < 0.001$ ).

The patients of the cluster "All Types of Trauma" stated significantly more severe psychiatric problems compared with the patients of the cluster "None or Minimal Trauma"

( $p < 0.001$ ) and "Emotional Neglect" ( $p = 0.026$ ). There were no significant differences between the remaining clusters.

#### Family Relationship Problems

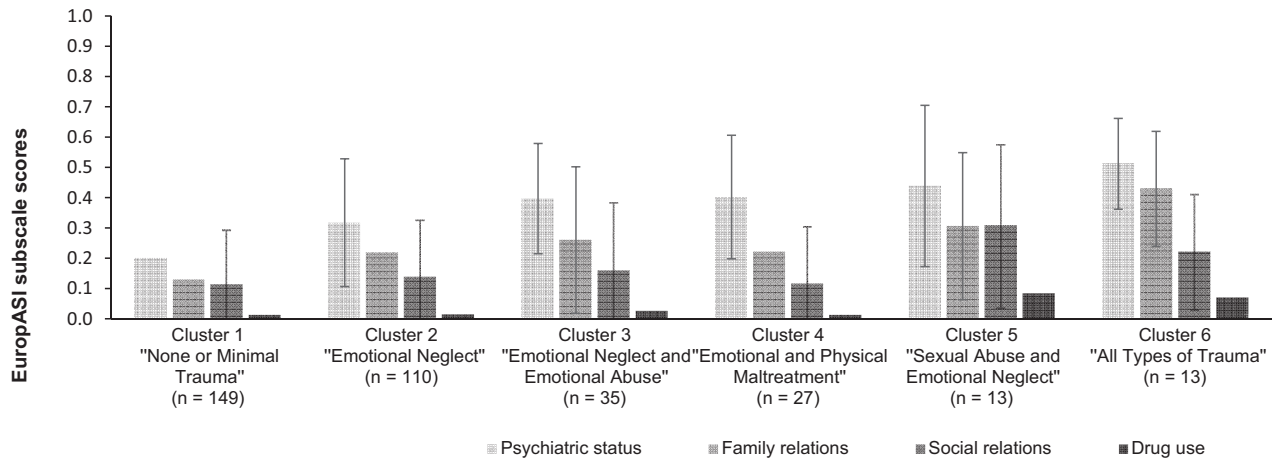
Trauma clusters were also significantly associated with the patients' severity of family relationship problems. While the patients of the cluster "None or Minimal Trauma" had the lowest severity of family relationship problems, the patients of the cluster "All Types of Trauma" reported the highest severity of family relationship problems. Post hoc tests indicated that the patients of the cluster "All Types of Trauma" had significantly more severe family relationship problems than the patients of the clusters "None or Minimal Trauma" ( $p < 0.001$ ) and "Emotional Neglect" ( $p = 0.013$ ), and more severe family relationship problems than the patients of the cluster "Emotional and Physical Maltreatment" by trend ( $p = 0.52$ ). The patients of the cluster "Sexual Abuse and Emotional Neglect" showed more severe family relationship problems than the patients with "None or Minimal Trauma" by trend ( $p = 0.057$ ). In the clusters of "Emotional Neglect

**Table 3.** Univariate Effects of the Patients' Childhood Trauma Profiles on the Patients' Current Addiction-Related Problems ( $n = 347$ )

| Addiction-related problems | df | df <sub>error</sub> | F    | Partial $\eta^2$ | p      | Post hoc comparisons <sup>a</sup>                  |
|----------------------------|----|---------------------|------|------------------|--------|--|
| Psychiatric status         | 5  | 339                 | 10.7 | 0.138            | <0.001 | Cluster 1 < 2, 3, 4, 5, 6; Cluster 2 < Cluster 6   |
| Family relationships       | 5  | 339                 | 6.9  | 0.093            | <0.001 | Cluster 1, 2 < Cluster 6; Cluster 1 < Cluster 2, 3 |
| Social relationships       | 5  | 341                 | 2.4  | 0.035            | 0.034  | Cluster 1, 2, 4 < Cluster 5                        |
| Alcohol use                | 5  | 339                 | 1.2  | 0.018            | 0.302  |  |
| Drug use                   | 5  | 339                 | 3.6  | 0.051            | 0.003  | Cluster 1, 2, 4 < Cluster 5                        |
| Medical status             | 5  | 339                 | 2.0  | 0.029            | 0.077  |  |
| Economic situation         | 5  | 339                 | 1.7  | 0.024            | 0.141  |  |
| Work situation             | 5  | 339                 | 0.7  | 0.010            | 0.664  |  |
| Legal status               | 5  | 339                 | 1.5  | 0.022            | 0.149  |  |

Addicted-related problems were assessed by the European Addiction Severity Index. Cluster 1 = "No or Minimal Trauma." Cluster 2 = "Emotional Neglect." Cluster 3 = "Emotional Neglect and Emotional Abuse." Cluster 4 = "Emotional and Physical Maltreatment." Cluster 5 = "Sexual Abuse and Emotional Neglect." Cluster 6 = "All Types of Trauma."

<sup>a</sup>All reported pairwise post hoc group differences between the childhood trauma clusters were significant at  $p < 0.05$ .



**Fig. 2.** Mean severity of addiction-related problems in the domains of psychiatric status, family relations, social relations, and drug use across the 6 childhood trauma clusters. Error bars denote 1 standard deviation around the mean, 0 = no problem to 1 = extreme problem.

and Emotional Abuse” and “Emotional Neglect,” the patients showed significantly more severe family relationship problems than the patients of the cluster “None or Minimal Trauma.” The patients of the remaining clusters did not significantly differ in their family relationship problems.

#### *Social Relationship Problems*

Problems in social relationships outside the family were also significantly affected by the patients’ cluster affiliation. The most severe problems in social relationships were reported by the patients of the cluster “Sexual Abuse and Emotional Neglect.” Post hoc comparisons indicated that the patients of the cluster “All Types of Trauma” did not significantly differ in their severity of social relationship problems from the patients of the remaining clusters. By contrast, the patients with “Sexual Abuse and Emotional Neglect” reported significantly more severe problems in their social relationships than the patients with “Emotional and Physical Maltreatment ( $p = 0.042$ ), “Emotional Neglect” ( $p = 0.036$ ) and “None or Minimal Trauma” ( $p = 0.008$ ). There were no significant differences between the remaining cluster combinations.

#### *Drug Use Problems*

The trauma cluster membership was unrelated to the patients’ severity of current alcohol use. Instead, the cluster membership affected the patients’ severity of drug use problems other than alcohol. Post hoc tests indicated that the patients with “All Types of Trauma” did not significantly differ from all other trauma clusters in the severity of drug use problems. The patients with “Sexual Abuse and Emotional Neglect” reported more severe drug use problems than the patients of the clusters “Emotional and Physical Maltreatment” ( $p = 0.014$ ), “Emotional Neglect” ( $p = 0.003$ ), and “None or Minimal Trauma” ( $p = 0.002$ ). Moreover, there was a trend of

more severe drug use problems between “Sexual Abuse and Emotional Neglect” and patients with “Emotional Neglect and Emotional Abuse” ( $p = 0.056$ ). The remaining clusters did not differ in their severity of drug use problems.

#### *Medical Problems*

The childhood trauma clusters differed by trend in the patients’ severity of current medical problems, with the patients of the cluster “All Types of Trauma” showing the trend to have more severe medical problems than the patients of the cluster “None or Minimal Trauma” ( $p = 0.90$ ).

#### *Economic, Work, and Legal Problems*

Trauma clusters were unrelated to the patients’ economic situation, work related problems, and legal problems.

#### *Relations Between Childhood Trauma Clusters and Alcohol Dependence Characteristics*

In our additional analysis using the patients’ alcohol dependence characteristics as outcomes, the patients’ gender was included in the model as a covariate, because the patients’ gender was related to the dependent variables age at onset of substance dependence, years of substance dependence, and number of previous detoxifications,  $F(3, 239) = 5.77$ ,  $p < 0.001$ ,  $\eta^2 = 0.068$ . The MANOVA model revealed a significant multivariate effect for the 6 childhood trauma clusters on the 3 outcome variables,  $F(15, 660) = 3.45$ ,  $p < 0.001$ , partial  $\eta^2 = 0.067$ . Age at onset of substance dependence,  $F(5, 241) = 4.52$ ,  $p < 0.001$ ,  $\eta^2 = 0.086$ , years of substance dependence,  $F(5, 241) = 2.66$ ,  $p = 0.023$ ,  $\eta^2 = 0.052$ , and number of previous detoxifica-

tions,  $F(5, 241) = 2.29$ ,  $p = 0.023$ ,  $\eta^2 = 0.045$ , were significantly related to the childhood trauma clusters.

## DISCUSSION

### *Childhood Trauma Profiles*

To our knowledge, this is the first study that examined childhood trauma profiles in alcohol-dependent patients based on 5 types of traumatic experiences (sexual abuse, physical abuse, emotional abuse, emotional neglect, and physical neglect). We identified 1 profile of none or minimal traumatized patients and 5 profiles with combinations of patients with different types and severities of childhood trauma.

A large group of patients experienced only emotional neglect. In another group of patients, emotional neglect was combined with emotional abuse. About 42% of all patients belonged to these 2 groups. This result emphasizes the need to consider emotional trauma in addition to traumatic experiences that involve body contact. A smaller group of patients reporting emotional neglect and emotional abuse experienced physical maltreatment in addition to these forms of childhood trauma. Sexual abuse occurred in 2 different traumatic contexts: one group of patients experienced severe sexual abuse combined with emotional neglect, whereas a second group of patients experienced severe sexual abuse as well as severe levels of all remaining types of childhood trauma. Sexual abuse, therefore, seems to typically occur in a context of emotional neglect, with or without additional physical abuse. Consistent with this assumption, Marshall (1996, 2010) proposed that emotional neglect is an indispensable condition for sexual abuse within families.

It should be noted that all profiles including physical or sexual abuse (or both) incorporated emotional maltreatment. It could, thus, be questioned that the well-documented negative effects of physical abuse and sexual abuse on health outcomes (Enoch, 2011; Fergusson et al., 2008; Kendler et al., 2000) are caused by these types of childhood trauma alone. Rather, the interplay between physical or sexual abuse with other types of trauma may lead to the harmful consequences of traumatic experiences.

The 6 identified childhood trauma profiles in our patients with alcohol dependence are consistent with the trauma profiles found in a study of patients among poly-substance-dependent patients (Ruggiero et al., 1999). These results may suggest that the found childhood trauma profiles might be valid independently from the type of substance use. However, Tubman and colleagues (2011) reported only 3 different childhood trauma profiles in patients with substance use disorders (neglect, negative home environment, and sexual abuse), whereas our analyses were based on 5 types of childhood trauma. Hence, it could be expected that we would yield a higher number of

childhood trauma profiles compared to this study. Additional research should consolidate whether the identified childhood trauma profiles are characteristic for substance use disorder patients in general.

### *Relations Between Childhood Trauma Clusters and Current Addiction-Related Problems*

The patients' childhood trauma profiles were significantly related to important areas of current psychosocial functioning. Patients of all 5 clusters characterizing different profiles of childhood trauma, including those who had experienced emotional neglect, suffered from significantly more severe psychiatric problems and family relationship problems than patients unexposed to childhood trauma. As the damaging consequences of emotional neglect have not been considered in most of the existing studies (Evren et al., 2006; Triffleman et al., 1995), our results indicate that this group of traumatized individuals may need more attention in further research.

The patients of the cluster with the highest burden of childhood trauma reported the most severe problems in the domains of psychiatric symptoms and family relationships. In contrast, sexually abused and severely neglected but not physically abused patients reported the highest severity of problems in social relationships outside their family. Sexual abuse combined with severe emotional neglect might thus lead to especially severe impairments of interpersonal functioning later in life.

While childhood trauma has been related to medical problems in community samples (Felitti et al., 1998), studies using the Addiction Severity Index (McLellan et al., 1992) in substance use disorder patients have yielded inconsistent results (Charney et al., 2007; Dickinson et al., 1999; Felitti et al., 1998). In our sample, relationships were found by trend level. Further studies should examine whether patients exposed to all types of trauma suffer from more severe medical problems than the patients exposed to none or minimal trauma.

Patients with substance dependence other than alcohol were excluded from our study, but substance abuse other than alcohol could be present in the patients as long as no diagnosis of dependence was fulfilled. We found that severely sexually abused and emotionally neglected patients faced more severe drug use problems than the patients that were emotionally and physically abused, or the patients that were only emotionally neglected. Further studies using patients with higher levels and variations of drug use problems than included in our study should examine whether the severity of drug use problems is related to different childhood trauma profiles.

The severity of current alcohol use problems was unrelated to childhood trauma profiles in our sample. Although earlier studies in substance use disorder samples concurred with our findings (Branstetter et al., 2008; Pirard et al., 2005), studies of general population samples often reported such relations (Schuck and Widom, 2001; Timko et al., 2008), potentially



as a result of the higher variance in the severity of alcohol abuse in the respective populations. Our finding that the severity of current alcohol use problems was unrelated to childhood trauma profiles might be confounded by our recruitment strategy. The participants of our study were asked to retrospectively estimate their alcohol use problems prior to their detoxification. We additionally examined relations between childhood trauma clusters and alcohol dependence characteristics and found that age at onset of substance dependence, years of substance dependence, and number of previous detoxifications were significantly related to the childhood trauma clusters. These results are consistent with previous studies that reported that patients exposed to childhood trauma develop alcohol use disorders at an earlier age (Dom et al., 2007; Kaufman et al., 2007) and may be particularly vulnerable to severe alcohol dependence (Schwandt et al., 2013).

Earlier studies reported a dose–response relationship between the number of childhood trauma types and the severity of addiction-related problems. For example, the Adverse Childhood Experiences study (Anda et al., 2002; Edwards et al., 2003) found that a greater number of childhood trauma types were related to a higher risk of current alcohol dependence in a general population sample. Huang and colleagues (2012) reported that a higher number of childhood trauma types was associated with a higher risk of psychiatric comorbidities and suicide attempts in patients with alcohol dependence. Consistent with these results, we found that childhood trauma profiles including a greater number of trauma types were related to a greater risk of current addiction-related problems in a sample of alcohol-dependent patients.

We went beyond the traditional approach of counting numbers of childhood trauma types by using trauma profiles that included the combination of trauma types with different severities. This approach revealed new insight that could not be obtained by only counting numbers of childhood trauma types. For example, the patients of both the clusters “Emotional and Physical Maltreatment” and “Sexual Abuse and Emotional Neglect” were exposed to 4 types of childhood trauma, but the patients with the trauma profile of “Sexual Abuse and Emotional Neglect” showed more severe current social problems. This result indicates that not only the number, but also the combination of different childhood trauma types may impact on the patients’ current addiction-related problems.

The childhood trauma profiles were most strongly related to psychiatric, social, and family relationship problems in alcohol-dependent patients. Childhood trauma is an unspecific risk factor that increases the likelihood to develop a variety of psychiatric disorders (Kendler et al., 2000), although childhood trauma is most strongly associated with alcohol and other drug dependence. Therefore, the found relations between childhood trauma profiles and psychiatric, social, and family relationship problems may also be found in patients without substance use dis-

orders. Nevertheless, the higher psychiatric and social problems in patients with alcohol dependence that had been exposed to childhood trauma indicate that these patients need a treatment that considers not only the alcohol dependence, but also comorbid psychiatric problems, social relationship, and family relationship problems.

A strength of our study is the assessment of a wide range of different childhood trauma types, including not only physical and sexual abuse, but also emotional abuse, emotional neglect, and physical neglect. We also went beyond traditional approaches by investigating childhood trauma profiles including different severities and types of trauma. A limitation of our study is the small number of individuals of the clusters “Sexual Abuse and Emotional Neglect” and “All Types of Trauma,” leading to low statistical power to discriminate between these groups. Further studies should include larger sample sizes to obtain appropriate group sizes of patients with severe trauma profiles. The validity of our results might also be limited by the use of retrospective self-reports to measure childhood trauma that are susceptible to memory bias. The inclusion of alcohol-dependent inpatients admitted to a detoxification unit limits the generalizability of our findings to alcohol-dependent inpatients. Further studies should recruit both alcohol-dependent inpatients and outpatients. We did not assess the number of eligible subjects upon admission to the number actually enrolled. We also did not consider comorbid posttraumatic, depressive, or anxiety symptoms in our analyses that may have mediated the association between childhood trauma profiles and current severity of addiction-related problems (Douglas et al., 2010; Epstein et al., 1998; Muller et al., 2015). For example, patients exposed to childhood trauma may use alcohol to cope with posttraumatic or anxiety symptoms caused by the traumatic experience (Khantzian, 1997). These factors should be considered as potential mediators in subsequent research. Future research should also focus on the underrepresented types of childhood trauma, that is, emotional abuse, emotional neglect, and physical neglect.

Our analyses based on childhood trauma profiles expand the findings of previous studies (Branstetter et al., 2008; Huang et al., 2012; Pirard et al., 2005) that examined the influence of childhood trauma categories (traumatized vs. nontraumatized) or the number of childhood trauma types on addiction-related problems. Different types and severities of childhood trauma in alcohol-dependent patients highly co-occurred and were grouped into 6 childhood trauma profiles. The childhood trauma profiles were related to the patient’s current addiction-related problems, particularly in the psychosocial domain. Our findings suggest that a more differentiated view on trauma exposure is needed instead of the common distinction between traumatized versus nontraumatized patients. Childhood trauma profiles may better inform healthcare providers about the patients’ risk of their current addiction-related problems and may help to identify the patients’ specific treatment needs.



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## REFERENCES

- American Psychiatric Association (1994) *Diagnostic and Statistical Manual of Mental Disorders*. 4th ed. American Psychiatric Association, Washington, DC.
- Anda RF, Whitfield CL, Felitti VJ, Chapman D, Edwards VJ, Dube SR, Williamson DF (2002) Adverse childhood experiences, alcoholic parents, and later risk of alcoholism and depression. *Psychiatr Serv* 53:1001–1009.
- Berglund KJ, Balldin J, Berggren U, Gerdner A, Fahlke C (2013) Childhood maltreatment affects the serotonergic system in male alcohol-dependent individuals. *Alcohol Clin Exp Res* 37:757–762.
- Bernstein DP, Fink FL (1998) *Childhood Trauma Questionnaire: A Retrospective Self-Report: Manual*. The Psychological Corporation, New York, NY.
- Branstetter SA, Bower EH, Kamien J, Amass L (2008) A history of sexual, emotional, or physical abuse predicts adjustment during opioid maintenance treatment. *J Subst Abuse Treat* 34:208–214.
- Charney DA, Palacios-Boix J, Gill KJ (2007) Sexual abuse and the outcome of addiction treatment. *Am J Addict* 16:93–100.
- Clatworthy J, Hankins M, Buick D, Weinman J, Horne R (2007) Cluster analysis in illness perception research: a Monte Carlo study to identify the most appropriate method. *Psychol Health* 22:123–142.
- Dickinson LM, deGruy FV, Dickinson WP, Candib LM (1999) Health-related quality of life and symptom profiles of female survivors of sexual abuse. *Arch Fam Med* 8:35–43.
- Dom G, De Wilde B, Hulstijn W, Sabbe B (2007) Traumatic experiences and posttraumatic stress disorders: differences between treatment-seeking early- and late-onset alcoholic patients. *Compr Psychiatry* 48:178–185.
- Douglas KR, Chan G, Gelernter J, Arias AJ, Anton RF, Weiss RD, Kranzler HR (2010) Adverse childhood events as risk factors for substance dependence: partial mediation by mood and anxiety disorders. *Addict Behav* 35:7–13.
- Edwards VJ, Holden GW, Felitti VJ, Anda RF (2003) Relationship between multiple forms of childhood maltreatment and adult mental health in community respondents: results from the adverse childhood experiences study. *Am J Psychiatry* 160:1453–1460.
- Enoch M-A (2011) The role of early life stress as a predictor for alcohol and drug dependence. *Psychopharmacology* 214:17–31.
- Epstein JN, Saunders BE, Kilpatrick DG, Resnick HS (1998) PTSD as a mediator between childhood rape and alcohol use in adult women. *Child Abuse Negl* 22:223–234.
- Evren C, Kural S, Cakmak D (2006) Clinical correlates of childhood abuse and neglect in substance dependents. *Addict Behav* 31:475–485.
- Farley M, Golding JM, Young G, Mulligan M, Minkoff JR (2004) Trauma history and relapse probability among patients seeking substance abuse treatment. *J Subst Abuse Treat* 27:161–167.
- Felitti M, Vincent J, Anda M, Robert F, Nordenberg M, Williamson M, Edwards B (1998) Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: the adverse childhood experiences (ACE) study. *Am J Prev Med* 14:245–258.
- Fergusson DM, Boden JM, Horwood LJ (2008) Exposure to childhood sexual and physical abuse and adjustment in early adulthood. *Child Abuse Negl* 32:607–619.
- Fink L, Bernstein DP, Handelsman L, Foote J, Lovejoy M (1995) Initial reliability and validity of the childhood trauma interview: a new multidimensional measure of childhood interpersonal trauma. *Am J Psychiatry* 152:1329–1335.
- Finkelhor D, Ormrod RK, Turner HA, Avery-Leaf S, Cascardi M, O'Leary K, Ducot B (2007) Polyvictimization and trauma in a national longitudinal cohort. *Dev Psychopathol* 19:149–166.
- Greenfield SF, Kolodziej ME, Sugarman DE, Muenz LR, Vagge LM, He DY, Weiss RD (2002) History of abuse and drinking outcomes following inpatient alcohol treatment: a prospective study. *Drug Alcohol Depend* 67:227–234.
- Gsellhofer B, Kuefner H, Vogt M, Weiler D (1999) *European Addiction Severity Index EuroASI: Manual for Training and Application*. IFT Institute for Therapy Research, Munich, Germany.
- Huang M-C, Schwandt ML, Ramchandani VA, George DT, Heilig M (2012) Impact of multiple types of childhood trauma exposure on risk of psychiatric comorbidity among alcoholic inpatients. *Alcohol Clin Exp Res* 36:598–606.
- Jaycox LH, Ebener P, Damesek L, Becker K (2004) Trauma exposure and retention in adolescent substance abuse treatment. *J Trauma Stress* 17:113–121.
- Kaufman J, Yang BZ, Douglas-Palumberi H, Crouse-Artus M, Lipschitz D, Krystal JH, Gelernter J (2007) Genetic and environmental predictors of early alcohol use. *Biol Psychiatry* 61:1228–1234.
- Kendler KS, Bulik CM, Silberg J, Hettema JM, Myers J, Prescott CA (2000) Childhood sexual abuse and adult psychiatric and substance use disorders in women: an epidemiological and cotwin control analysis. *Arch Gen Psychiatry* 57:953–959.
- Kessler RC, Crum RM, Warner LA, Nelson CB, Schulenberg J, Anthony JC (1997a) Lifetime co-occurrence of DSM-III-R alcohol abuse and dependence with other psychiatric disorders in the national comorbidity survey. *Arch Gen Psychiatry* 54:313–321.
- Kessler RC, Davis CG, Kendler KS (1997b) Childhood adversity and adult psychiatric disorder in the US national comorbidity survey. *Psychol Med* 27:1101–1119.
- Khantzian EJ (1997) The self-medication hypothesis of substance use disorders: a reconsideration and recent applications. *Harv Rev Psychiatry* 4:231–244.
- Khoury L, Tang YL, Bradley B, Cubells JF, Ressler KJ (2010) Substance use, childhood traumatic experience, and posttraumatic stress disorder in an urban civilian population. *Depress Anxiety* 27:1077–1086.
- Kilpatrick DG, Acierno R, Saunders B, Resnick HS, Best CL, Schnurr PP (2000) Risk factors for adolescent substance abuse and dependence: data from a national sample. *J Consult Clin Psychol* 68:19–30.
- Langeland W, Hartgers C (1998) Child sexual and physical abuse and alcoholism: a review. *J Stud Alcohol* 59:336–348.
- Lobbestael J, Leurgans M, Arntz A (2011) Inter-rater reliability of the structured clinical interview for DSM-IV axis I disorders (SCID I) and axis II disorders (SCID II). *Clin Psychol Psychother* 18:75–79.
- Marshall WL (1996) Assessment, treatment, and theorizing about sex offenders: developments during the past twenty years and future directions. *Crim Justice Behav* 23:162–199.
- Marshall WL (2010) The role of attachments, intimacy, and loneliness in the etiology and maintenance of sexual offending. *Sex Relation Ther* 25:73–85.
- McLellan AT, Kushner H, Metzger D, Peters R, Smith I, Grissom G, Argeriou M (1992) The fifth edition of the addiction severity index. *J Subst Abuse Treat* 9:199–213.
- Muller M, Vandeleur C, Rodgers S, Rossler W, Castelao E, Preisig M, Ajdacic-Gross V (2015) Posttraumatic stress avoidance symptoms as mediators in the development of alcohol use disorders after exposure to childhood sexual abuse in a Swiss community sample. *Child Abuse Negl* 46:8–15.
- Nayak MB, Lown EA, Bond JC, Greenfield TK (2012) Lifetime victimization and past year alcohol use in a U.S. population sample of men and women drinkers. *Drug Alcohol Depend* 123:213–219.

- Norman RE, Byambaa M, De R, Butchart A, Scott J, Vos T (2012) The long-term health consequences of child physical abuse, emotional abuse, and neglect: a systematic review and meta-analysis. *PLoS Med* 9: e1001349.
- NSPCC (2010) Child Protection Fact Sheet: The Definitions and Signs of Child Abuse. pp 1–7. National Society for the Prevention of Cruelty to Children, London.
- Pirard S, Sharon E, Kang SK, Angarita GA, Gastfriend DR (2005) Prevalence of physical and sexual abuse among substance abuse patients and impact on treatment outcomes. *Drug Alcohol Depend* 78:57–64.
- Regier DA, Farmer ME, Rae DS, Locke BZ, Keith SJ, Judd LL, Goodwin FK (1990) Comorbidity of mental disorders with alcohol and other drug abuse. Results from the Epidemiologic Catchment Area (ECA) Study. *JAMA* 264:2511–2518.
- Rodgers CS, Lang AJ, Laffaye C, Satz LE, Dresselhaus TR, Stein MB (2004) The impact of individual forms of childhood maltreatment on health behavior. *Child Abuse Negl* 28:575–586.
- Ruggiero J, Bernstein DP, Handelsman L (1999) Traumatic stress in childhood and later personality disorders: a retrospective study of male patients with substance dependence. *Psychiatr Ann* 29:713–721.
- Sartor CE, Lynskey MT, Bucholz KK, McCutcheon VV, Nelson EC, Waldron M, Heath AC (2007) Childhood sexual abuse and the course of alcohol dependence development: findings from a female twin sample. *Drug Alcohol Depend* 89:139–144.
- Scheurich A, Mueller M, Wetzel H, Anghelescu I, Klawe C, Ruppe A, Schmid G (2000) Reliability and validity of the German version of the European addiction severity index (EuropASI). *J Stud Alcohol Drugs* 61:916–919.
- Schmidt P, Kuefner H, Hasemann S, Loehnert B, Kolb W, Zemlin U, Soyka M (2007) Ist der European addiction severity index ein sinnvolles Diagnoseinstrument bei alkoholabhängigkeit? *Fortschr Neurol Psychiatr* 75:541–548.
- Schuck AM, Widom CS (2001) Childhood victimization and alcohol symptoms in females: causal inferences and hypothesized mediators. *Child Abuse Negl* 25:1069–1092.
- Schwandt ML, Heilig M, Hommer DWT, George D, Ramchandani VA (2013) Childhood trauma exposure and alcohol dependence severity in adulthood: mediation by emotional abuse severity and neuroticism. *Alcohol Clin Exp Res* 37:984–992.
- Simons L, Ducette J, Kirby KC, Stahler G, Shipley TE (2003) Childhood trauma, avoidance coping, and alcohol and other drug use among women in residential and outpatient treatment programs. *Alcohol Treat Q* 21:37–54.
- Spak L, Spak F, Allebeck P (1997) Factors in childhood and youth predicting alcohol dependence and abuse in Swedish women: findings from a general population study. *Alcohol Alcohol* 32:267–274.
- Stoltenborgh M, Bakermans-Kranenburg M, van Ijzendoorn M (2013) The neglect of child neglect: a meta-analytic review of the prevalence of neglect. *Soc Psychiatry Psychiatr Epidemiol* 48:345–355.
- Teicher MH, Samson JA, Polcari A, McGreenery CE (2006) Sticks, stones, and hurtful words: relative effects of various forms of childhood maltreatment. *Am J Psychiatry* 163:993–1000.
- Timko C, Sutkowi A, Pavao J, Kimerling R (2008) Women's childhood and adult adverse experiences, mental health, and binge drinking: the California Women's Health Survey. *Subst Abuse Treat Prev Policy* 3:15.
- Triffleman EG, Marmar CR, Delucchi KL, Ronfeldt H (1995) Childhood trauma and posttraumatic stress disorder in substance abuse inpatients. *J Nerv Ment Dis* 183:172–176.
- Tubman JG, Oshri A, Taylor HL, Morris SL (2011) Maltreatment clusters among youth in outpatient substance abuse treatment: co-occurring patterns of psychiatric symptoms and sexual risk behaviors. *Arch Sex Behav* 40:301–309.
- Walitzer KS, Dearing RL (2006) Gender differences in alcohol and substance use relapse. *Clin Psychol Rev* 26:128–148.
- Weiler D, Vogt M, Kuefner H (2000) Anwendung des European addiction severity index (EuropASI) im Rahmen einer ambulanten Behandlung von Drogenabhängigen [Application of the European addiction severity index (EuropASI) in the context of an ambulatory treatment of individuals with drug dependence]. *SUCHT* 46:197–208.
- WHO (2002) Child abuse and neglect by parents and other caregivers, in *World Report on Violence and Health* (Krug EG, Dahlberg LL, James M, Zwi AB, Lozano R eds), pp 59–86. World Health Organization, Geneva.
- Wingenfeld K, Spitzer C, Mensebach C, Grabe HJ, Hill A, Gast U, Driessen M (2010) Die deutsche version des childhood trauma questionnaire (CTQ): erste befunde zu den psychometrischen kennwerten. [The German version of the childhood trauma questionnaire (CTQ): preliminary psychometric properties]. *Psychother Psychosom Med Psychol* 60:442–450.
- Wittchen H-U, First MB (1997) *Strukturiertes Klinisches Interview für DSM-IV: Achse I und II*. Hogrefe, Göttingen, Germany.
- Zanarini MC, Frankenburg FR (2001) Attainment and maintenance of reliability of axis I and II disorders over the course of a longitudinal study. *Compr Psychiatry* 42:369–374.